

Early Diagnosis of Neuropsychological Illness in Traumatic Temporal Lobe Injury

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Abstract

Introduction: Traumatic brain injury is the major health problem in India. An increase in population, motorization, and industrialization has contributed in rise of trauma results in death and disability. Young's are more affected and males are more than female. In India, more than 100,000 lives are lost every year with over 1 million suffering from serious head injuries as per Indian head injury foundation. Consequently, the needs for rehabilitation in brain injured persons are significantly high and increasing from year to year. The risk factor for the development of psychiatric illness is young age, low educational status, and low Glasgow Coma Scale at the time of impact.

Materials and Methods: Thirty cases are studied age between 18 and 60 years who were under went RTA in Madurai for the period of 1 year from June 2019 to June 2020. The affected cases underwent radiological investigation and treated conservatively and discharge. On follow-up, they were tested for psychological illness such as depression, anxiety, post-traumatic stress disorder behavioral changes by diagnostic and statistical manual (DSM) of mental disorder fourth edition (DSM 4), and International Statistical Classification of Diseases 10th revision.

Results: In the present study, the following trauma male is more prone to develop anxiety, memory disturbances, depression, post-traumatic stress disorder, and behavioral changes than female patient as per the data available in our study. The reason may be due to more outdoor stress, poor performance, and inability to carry out responsibility following trauma.

Conclusion: From the current study, it is seen that some percentage of people developed psychiatric illness following trauma. It is important to have strong suspicion to diagnose psychiatric manifestation early. Hence, early treatment can be given to prevent progression and severity of psychiatric illness. It is note worth to mention that patient counseling and family counseling along with family support and social support are as important as medical treatment.

Key words: DSM IV, ICD 10, Temporal lobe injury

INTRODUCTION

Traumatic brain injury (TBI) is the major health problem in India. An increase in population, motorization, and industrialization has contributed in rise of trauma results in death and disability. Young's are more affected and males are more than female. Road traffic injuries are the leading cause (60%) of TBIs followed by falls (20–25%) and violence (10%) as per Gururaj *et al.*, NIMHANS. In India, more than 100,000

lives are lost every year with over 1 million suffering from serious head injuries as per Indian Head Injury Foundation. Primary injury at the moment of impact progresses with hours and days to secondary brain injury which results in increased mortality and disability.^[1] Consequently, the early and appropriate management of TBI is critical to the survival of these patients. The needs for rehabilitation in brain injured persons are significantly high and increasing from year to year. The risk factor for the development of psychiatric illness is young age, low educational status, and low Glasgow Coma Scale at the time of impact.^[2] Approximately 48.3% of any psychiatric illness and 26.7% major depression are found post-traumatically compared to general population.^[3]

Aim and Objective

This study aims to diagnose early manifestation of psychiatric illness in temporal lobe injury.

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Inclusion Criteria

The following criteria were included in the study:

- Age between 18 years and 60 years
- Non-operative follow-up cases
- Only temporal lobe injury.

Exclusion Criteria

The following criteria were excluded from the study:

- Previous psychiatric illness
- Chronic alcoholics
- History of ganja, cannabis, and drug abuse.
- History previous head injury.

MATERIALS AND METHODS

- No. of patients 30
- Including both male and female
- Radiological and biochemical investigation were done
- Psychological criteria used are DSM 4 and International Statistical Classification of Diseases 10th revision (ICD10) for diagnosis of depression, anxiety, and post-traumatic stress disorder behavioral.

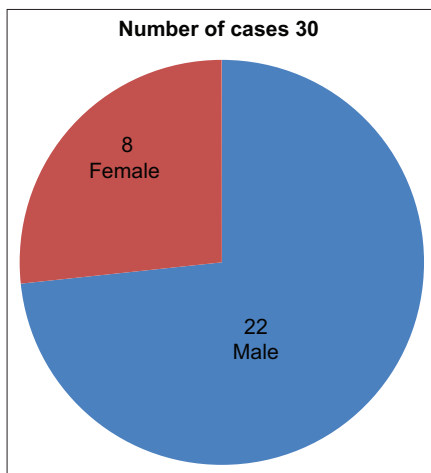
RESULTS

The present study variable analyses are as follows:

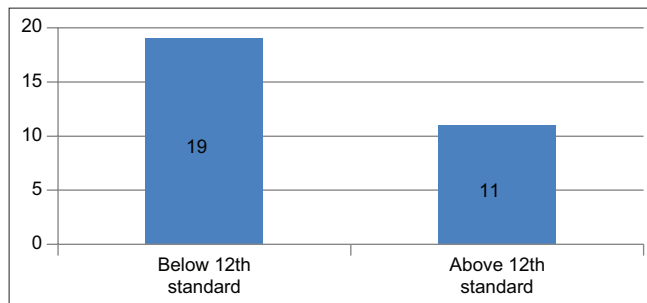
DISCUSSION

TBI is most common in our country hence increasing incidence of psychiatric illness following trauma. Males are usually higher than female. TBI is also common in elderly people. Here, we have included patients who sustained head injury with computed tomography (CT) brain demonstrating contusion in temporal lobe only [Figure 1]. CT finding of some patient demonstrated below.

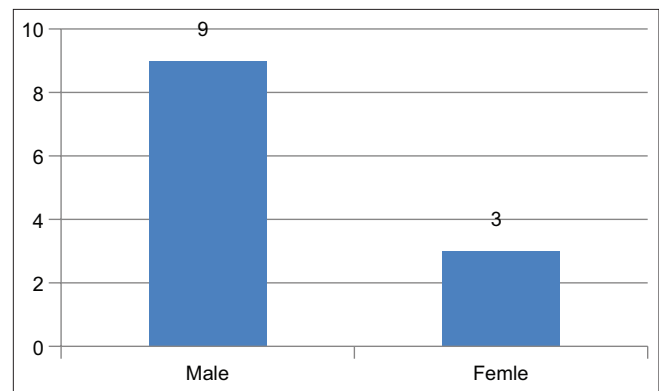
Diagnostic and statistical manual (DSM-IV) is the diagnostic statistical manual of mental disorder which conceptualized as a clinically significant behavioral or psychological syndrome or pattern that occurs in an



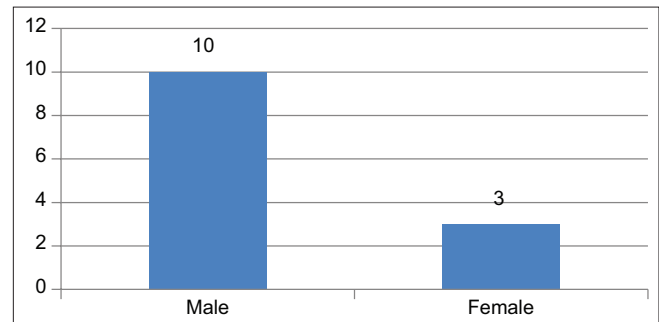
Graph 1: Distribution cases



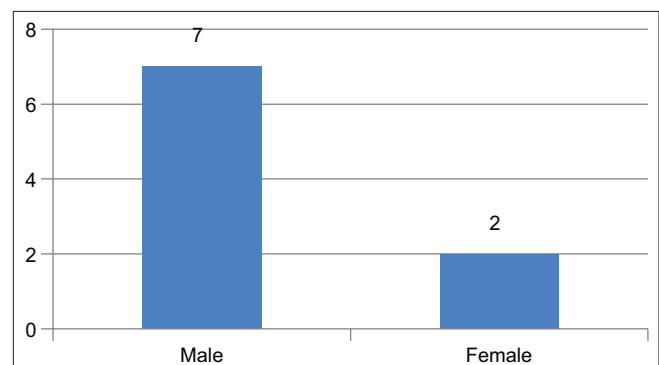
Graph 2: Distribution of educational status



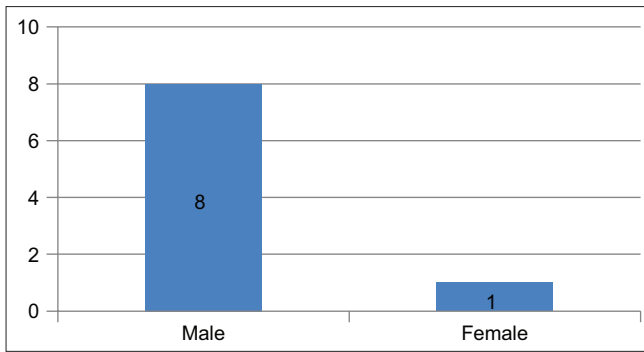
Graph 3: Distribution of memory disturbances



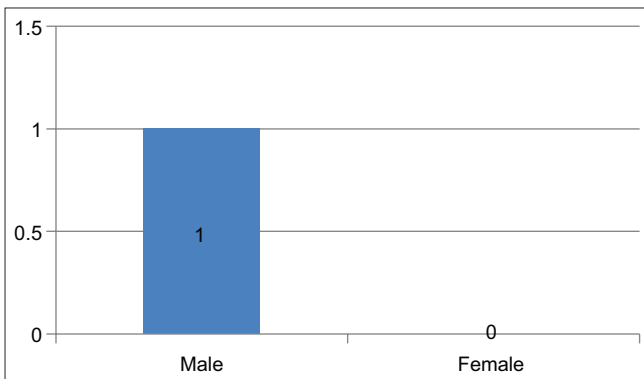
Graph 4: Distribution of anxiety



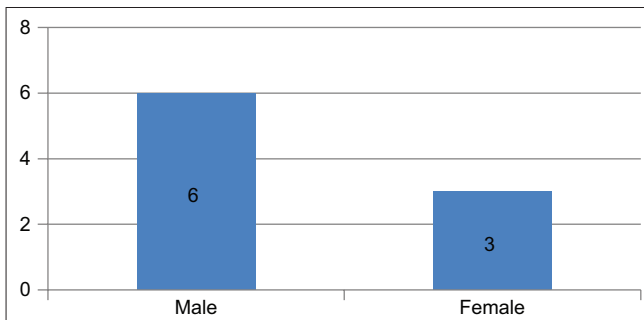
Graph 5: Distribution of post-traumatic stress disorder



Graph 7: Distribution of psychosis



Graph 6: Distribution of depression



Graph 8: Distribution of behavioral change

individual and that is associated with present distress. ICD10 is international statistical classification of disease and related health problems which is used for classifying mental and behavioral disorder. The DSM-IV and the ICD-10 contain the current classification of anxiety disorders. They use a categorical approach that defines mental disorders based on specific features. The DSM-IV utilizes a five axes classification enabling the complexity of the mental illness to be captured. The ICD-10 has seven categories defined under the heading neurotic, stress-related, and somatoform disorders (APA 2000; WHO 1992).^[4] DSM-IV defines post-traumatic stress disorder (PTSD) as physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.^[5] It also provides framework for classifying

Table 1: Results of these study

Disorder	Number	Proportion (%)	Total (%)
Memory disturbance	Male – 9	30	40%
	Female – 3	10	
Anxiety	Male – 10	33.33	43.33
	Female – 3	10	
Depression	Male – 8	26.66	30
	Female – 1	3.33	
Post-traumatic stress disorder	Male – 7	23.33	30
	Female – 2	6.66	
Psychosis	Male – 1	3.33	3.33
	Female – 0	0	
Behavior change	Male – 6	20	30
	Female – 3	10	

Table 2: Comparison of the present study with other study

Study	Present study (%)	Schwarzbold <i>et al.</i> (%)
Memory	40	–
Anxiety	43.33	41.2
Depression	30	33
Post-traumatic stress disorder	30	24
Psychosis	3.33	9.8
Behavioral changes	30	34.5

disorders and defining diagnostic criteria for the diagnosis of psychological illness.^[6]

Axis I: Clinical disorders and other clinical conditions that may be the focus of clinical attention.

Axis II: Personality disorders and mental retardation.

Axis III: General medical conditions.

Axis IV: Psychosocial and environmental problems.

Axis V: Global assessment of functioning.

Based on these criteria, Jorge *et al.* in their 6 months study in 2004 found that 33% have major depression,^[7] 27% by Seel *et al.* in 2003.^[8] Frequently depression and anxiety may coexist. Jorge found 41.2% of anxiety in depression patient. The patients who had memories of traumatic events within 24 h are a strong predictor of the occurrence of post-traumatic stress disorder. Glaesser *et al.* found PTSD in 27% of patients.^[9] Some studies also found that PTSD has a short course of existence so incidence may be variable. Bombardier *et al.* found that it was 14%.^[10] Behavioral changes after TBI occur that include apathy, emotional liability, and aggression. Some study define all these symptoms based on DSM IV-TR. Valero *et al.* found 34.5% of patients with apathy.^[11] Andersson *et al.* found 46.4% of apathy in patient with TBI.^[12] Whereas 16.4% of aggressive behavior found by Valero *et al.*,^[11] 25% by Baguley *et al.*,^[13] and emotional liability 32.7% by Valero *et al.*^[11] The study of cerebral lesions resulting in clearly definable psychiatric disorders may provide an understanding of the underlying pathophysiological bases



Figure 1: (a-d) Computed tomography brain demonstrating temporal lobe hemorrhagic contusion

of these disorders.^[14] There is an association between lesion type, location, and psychiatric symptoms.^[15]

In our study, the results reveal following trauma were that males are more prone to develop psychiatric illness than female [Graph 1]. The illness studied like, memory disturbances [Graph 3], anxiety [Graph 4], depression [Graph 6], posttraumatic stress disorder [Graph 5], and behavioral changes [Graph 8] and psychosis [Graph 7] were found to be more in male than female patient as per the data [Table 1] available in our study. The reason may be due to more outdoor stress, poor performance, and inability to carry out responsibility following trauma.

Our study finding is nearly similar to a study done by Schwarzbald *et al.* [Table 2].

Temporal lobe is responsible for auditory, language function and the hippocampus formation is for learning and memory function. Any damage to the temporal lobe mainly anterior and medial portion of temporal lobe may cause anxiety, fear, loss of memory, depression, PTSD, and psychosis. In our study, it is seen that those patients develop memory disturbances following mainly immediate and recent memory develop anxiety which precedes the development of depression, PTSD, and psychosis. Anxiety and memory loss may be the core reason for the development of depression and other psychiatric illness. In our study the development of anxiety, depression, post traumatic stress disorder were developed following trauma seen mostly in patients who are young, low socioeconomic status with low level education (Graph 2), and also who have uncomfortable relationship with family members. New-onset behavioral changes following trauma are revealed from the history of family members. Poor performance in work, memory impairment, and behavioral changes lead to obsession, anxiety, and deviation from work which leads to impairment of social relation which is followed by social isolation.

CONCLUSION

From our study, it is seen that some percentage of people developed psychiatric illness following trauma. It is important to have strong suspicion to diagnose psychiatric manifestation early. Trauma is an economic burden, moreover, if psychiatric illnesses develop, it will become more burden to family and society and to economy of the country also. Hence, early diagnosis and treatment is paramount important to prevent progression and severity of psychiatric illness. It is note worth to mention that patient counseling and family counseling along with family support and social support are as important as medical treatment.

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Since we come across many cases of road traffic accident in our institute, we did a prospective study in neuropsychological illness in traumatic temporal lobe injury. We wish to share our experience of 30 such cases through your esteemed journal publication.

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